

### REMARKS

Claims 1-13, 15 and 17-35 are pending in the present application, with claims 1, 21, 30, 33 and 34 being the independent claims.

#### **Claims 1-13, 15 and 18-20**

In the Official Action, dated March 9, 2006, claims 1-13, 15, and 18-20 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent No. 5,918,223 (Blum) in view of U.S. Patent No. 4,603,386 (Kjaer).

Applicants respectfully submit, however, that one of ordinary skill in the art would not be led to combine Kjaer with Blum in the manner suggested in the Official Action. This is because Blum explicitly states in the Summary of the Invention that “**The choice of which acoustical features to measure is critical to the success of the invention.**” Col. 3, lines 4-6. Then, as to which features are critical to the success of Blum’s system, Blum states, “The invention measures the loudness, bass, pitch, brightness, bandwidth, and Mel-frequency cepstral coefficients (MFCCs) at periodic intervals (referred to as “frames”) over the length of the sound file. The per-frame values are optionally stored, for applications that require that level of detail.” Col. 3, lines 6-11.

“A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994).

Thus, since “loudness, bass, pitch, brightness, bandwidth, and MFCCs” are the critical combination of features that lead to success according to Blum, one of ordinary skill in the art would not be led to add other measurements (such as Kjaer’s measurements) to the system of

Blum because Blum specifically states that doing so would not lead to the success that Blum's system enjoys.

Additionally, in response to Applicants' discussion that the combination of Blum and Kjaer is not believed to teach or suggest "inputting said *first (audio data subjected to a critical band filtering process), second (audio data subjected to an entropy calculation process) and third (the first derivative of audio data subjected to a critical band filtering process) output data to an averaging process* to form a spectral feature vector representing the input audio data," the Official Action states on page 2 that:

the combination clearly teaches that "These complete trajectories are computed during the analysis but generally are not stored in the database. However, for each of these trajectories, the trajectory's mean and standard deviation are computed and stored (Blum, Col. 6, lines 33-36). Blum teaches that it is favorable to store the average, or mean. The combination teaches that entropy is favorable in classifying information, wherein the combination would clearly store the mean and standard deviation of the entropy calculation.

In this regard, however, Applicants respectfully submit that MFCCs are not understood to be synonymous or the same as critical band filtering. MFCC calculations are derived from the fast fourier transform (FFT)/discrete cosine transmform (DCT) calculations wherein frequencies are instead placed logarithmically on the mel scale. This is not believed to be the same as critical band filtering.

Still further, Applicants respectfully submit that Blum does not teach or suggest the claimed third output data because Blum discloses to take the first derivative of the whole trajectory, rather than just the MFCCs. See Blum at Col. 6, lines 28-32 ("The first derivative is a measure of how fast the original trajectory [not just the MFCCs] changes over time.") In contrast, Applicants' claimed first derivative data (third output data), as recited in claim 1, is

formed by taking the first derivative of the audio data that was subjected to the critical band filtering process, not the whole feature vector.

Accordingly, Applicants respectfully submit that Blum teaches away from the combination of Blum and Kjaer and moreover, as described above, not all claimed limitations are taught or suggested by the combination. Reconsideration and withdrawal of the rejections to claims 1-13, 15 and 17-20 under 35 U.S.C. § 103(a) is thus earnestly requested.

#### **Claims 21-30**

In the Official Action, claims 21-25, 27 and 29 stand rejected under 35 U.S.C. § 102 as allegedly anticipated by Blum. In reviewing claim 21, Applicants have noted an issue with respect to antecedent basis, which has been corrected herein. No new matter was added. Applicants' respectfully traverse the outstanding rejection to claims 21-25, 27 and 29, as follows:

In essence, Blum is understood to teach only that, after the DSP processing is performed to create a database of DSP feature vectors for sound files, a user can create "classes" of sounds (e.g., "bird sounds", "rock music", etc.) by specifying a set of sound files that belong to this sound class in N-space. Blum Col. 3, lines 30-34.

Use of the system by the user, and creation of a classification chain, however, are separate acts. In the case of Blum, Blum creates a database of DSP only feature vectors (the DSP only classification structure) and then allows a user to navigate the structure by arbitrarily defining classes within the DSP only feature vector space (use of the DSP only classification structure).

In contrast, as recited in claim 21, Applicants' invention forms a classification chain based upon a plurality of spectral properties vectors, wherein each spectral properties vector includes both the spectral properties class(es) that are not based on DSP and spectral properties characteristic(s) that are based on DSP.

Claims 22-29 depend from claim 21 and are believed allowable for the same reasons.

### **Claims 30-33**

In the Official Action, claims 30-33 were rejected under 35 U.S.C. § 103 as allegedly unpatentable over U.S. Patent No. 6,539,395 (Gjerdingen). Applicants respectfully traverse as follows.

Applicants respectfully submit that the present invention, as recited in claims 30 and 33, requires a classification chain data structure, wherein each vector of the chain includes data representative of:

- spectral properties class(es) as classified by humans; **and**
- spectral properties characteristics as determined by digital signal processing.

Gjerdingen, in contrast, discloses two different and distinct embodiments, representing two distinct ways of collecting data relating to songs in the prior art, teaching away from any such combination. In the first passage relied upon in the Official Action, it states:

Listener perception data 401, instrument information data 402, *expert information data 403*, and explicit pairwise data 404 and thereafter fed in a research database 405 (also referred to as "R&D database". Col. 6, lines 42-46

However, this portion of Gjerdingen is understood by Applicants merely to disclose an embodiment in which expert information data 403 is fed into a database 405. Here,

Gjerdingen describes a first way of collecting data relating to audio which is not DSP classified data. Then, the Official Action refers to DSP data 403B, a second, but separate and distinct, known way of collecting data relating to audio, based on DSP techniques (but not human classification), wherein Gjerdingen says:

Data describing music attributes may also be collected by Digital Signal processing ("DSP") and stored as *DSP data 403B*, radio logging and stored as radio logged data 403D, and Internet Harvesting and stored Internet Harvested data 403E, using Spider techniques. Col. 6, lines 48-53

This portion of Gjerdingen is understood by Applicants to disclose an embodiment wherein DSP data 403B is input to a database along with radio logged data 403D and Internet Harvested data 403E. However, there is no teaching or suggestion found within Gjerdingen itself giving support for the idea that one of ordinary skill in the art would be led to combine these two disparate embodiments into a single classification chain data structure, or even how that would be operably achieved.

Forming a classification chain data structure based on both expert information 403 and DSP data 403B is nowhere taught or suggested in Gjerdingen, and thus Gjerdingen is merely understood to describe two different and distinct embodiments, with respect to which one of ordinary skill in the art would not know how to make modifications to include both embodiments simultaneously (no suggestions or motivations are included in Gjerdingen itself).

The Official Action states that "It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teachings of the two different embodiments in Gjerdingen for the purpose of more accurate classification." Applicants respectfully submit that this is mere legal conclusion based on no factual support. If such

factual support exists, Applicants respectfully request such a document that teaches or suggests such a motivation to combine two disparate prior art techniques into a single classification chain data structure, as Applicants can rely only what is taught by Gjerdingen itself – i.e., that the motivation to combine is absent. In the absence of such a document, such a legal conclusion appears to amount to impermissible hindsight reconstruction of Applicants' invention.

While knowledge of one of ordinary skill in the art can be relevant to the obviousness inquiry, Applicants respectfully submit the fact that the reference itself does not teach or suggest the combination is better evidence that one of ordinary skill in the art would not be led to form the claimed combination. Accordingly, reconsideration and withdrawal of the rejection to claims 30 and 33 is respectfully requested. Claims 31-32 depend from claim 30 and are believed allowable for the same reasons.

#### **Claims 34-35**

Finally, claims 17, 26 and 34-35 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Blum in view of Gjerdingen. Applicants have herein amended claim 34 to include the formation of a classification chain data structure that includes values calculated based on DSP processing, and spectral perceptual qualities as classified by human experts.

Without conceding the propriety of the combination of Blum and Gjerdingen, as discussed extensively herein, nowhere is the art of record believed to teach or suggest the formation of a classification chain data structure that includes both spectral perceptual qualities as classified by human experts, and DSP processed data values, as now recited in

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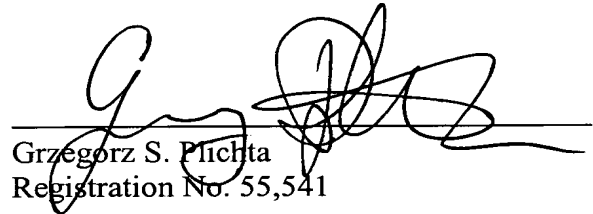
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claim 34. Reconsideration and withdrawal of the rejection to claim 34 is respectfully requested. Claim 35 depends from claim 34 and is believed allowable for the same reasons.

**CONCLUSION**

Accordingly, Applicants believe that the present Amendment is responsive to each of the points raised by the Examiner in the Office Action, and submit that Claims 1-13, 15, and 17-35 of the application are in condition for allowance. Favorable consideration and passage to issue of the application at the Examiner's earliest convenience is earnestly solicited.

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